UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

NMFS Tracking No.:
2003/00626

July 7, 2003

Mr. Stephen J. Wright, Administrator
ATTN: Ms. Shannon C. Stewart
Bonneville Power Administration
P.O. Box 3621
KEC-4
Portland, OR 97208-3621

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for East Fork of the Salmon River Diversion - SEF 12 , East Fork Salmon River, 5th HUC #1706020109, Custer County, Idaho (One Action)

Dear Ms. Stewart:

Enclosed is a document containing a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the proposed East Fork of the Salmon River Diversion - SEF 12, East Fork Salmon River, 5th HUC #1706020109, Custer County, Idaho. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Snake River spring/summer chinook salmon, and Snake River steelhead, and designated critical habitat. As required by section 7 of the ESA, NOAA Fisheries includes reasonable and prudent measures with nondiscretionary terms and conditions that NOAA Fisheries believes are necessary to minimize incidental take associated with this action.

This document contains a consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR Part 600). NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for Snake River spring/summer chinook salmon. As required by section 305(b)(4)(A) of the MSA, conservation recommendations and provisions are included in the BA and

the Opinion, that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH. Therefore, no further action is required under the MSA at this time.

If you have any questions regarding this letter, please contact Jim Huinker at (208) 756-6483 or Larry Zuckerman at (208) 756-6496 of my staff in the Idaho Habitat Branch, Salmon Field Office.

Sincerely,

for Michael R Course

D. Robert Lohn
Regional Administrator

Enclosure

cc: A. Simpson - BOR
N. Murillo - Shoshone-Bannock Tribes
C. Colter - Shoshone-Bannock Tribes
A. Johnson - Nez Perce Tribe
D. Johnson - Nez Perce Tribe
A. Miles - Nez Perce Tribe
M. Olson - NRCS
K. Bragg - CSWCD
D. Mignogno - USFWS
T. Curet - IDFG

Endangered Species Act Section 7 Consultation Biological Opinion
and
Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

East Fork of the Salmon River Diversion - SEF 12
Snake River Spring/Summer Chinook Salmon and Snake River Basin Steelhead
East Fork Salmon River
1706020109
Custer County, Idaho

Lead Action Agency: Bonneville Power Administration

Consultation Conducted By: NOAA's National Marine Fisheries Service, Northwest Region

Date Issued: 07/07/03

Issued by: for Michael R Course
D. Robert Lohn
Regional Administrator

NMFS Tracking No.: 2003/00525

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1. INTRODUCTION

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1544), as amended, establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with NOAA's National Marine Fisheries Service (NOAA Fisheries) and U.S. Fish and Wildlife Service (USFWS) (together "Services"), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitats. This biological opinion (Opinion) is the product of an interagency consultation pursuant to section 7(a)(2) of the ESA and implementing regulations 50 CFR 402.

The analysis also fulfills the Essential Fish Habitat (EFH) requirements under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (section 305(b)(2)).

The Bonneville Power Administration (BPA) proposes to replace the existing push-up berm at SEF 12 on the East Fork Salmon River (EFSR) with a permanent structure. Funding is provided as part of BPA's program to protect, mitigate and enhance fish and wildlife affected by the development and operation of hydroelectric facilities on the Columbia River and its tributaries. The purpose of the proposed diversion modification is to improve fish passage and habitat, reduce migration hazards, and to eliminate the need for annual in-stream maintenance of the diversion structure. The BPA is proposing the action according to its authority under the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Regional Act). The U.S. Department of Interior Bureau of Reclamation (BOR) is the designated technical representative administering this project. The administrative record for this consultation is on file at the Idaho Habitat Branch office.

1.1 Background and Consultation History

The Upper Salmon Basin Watershed Project, (ISCC 1995) developed by the Idaho Soil Conservation Commission for the Lemhi, Pahsimeroi, and East Fork of the Salmon River (East Fork), outlined objectives and goals as part of a regional effort to rebuild Columbia Basin salmon runs and specifically designed to protect and restore important salmon habitat. The first goal is to "provide for the safe and timely passage of migrating fish through critical reaches of the watershed" (ISCC 1995). The highest priority goals for the East Fork include reducing the number of physical barriers in the system, specifically diversion structures that needed screening on the mainstem and tributaries of the East Fork.

The East Fork Diversion 12 Removal and Replacement Project (SEF 12) was proposed under BPA's Power Emergency Action Plan and was approved for funding in February 2003, as part of an existing 2000 contract between BPA and the Custer Soil and Water Conservation District (District). The BOR is a water management agency that controls a number of hydropower and irrigation projects in the Columbia River Basin. Acting in concert with the Custer Soil and Water Conservation District (District), BOR is providing technical assistance with NEPA compliance and Endangered Species Act consultation for the SEF 12 Project. The USDA Natural Resources Conservation Service (NRCS) is assisting the District in the implementation of this project and is providing the planning and design work for the proposed SEF 12 Diversion structure, while BOR has designed the contract documents and specifications.

In December 2000, NOAA Fisheries issued a biological opinion on the "Reinitiation of Consultation on Operation of the Federal Columbia River Power System, Including the Juvenile Fish Transportation Program, and 19 Bureau of Reclamation Projects in the Columbia Basin (FCRPS Opinion) (NMFS 2000). The FCRPS Opinion included 199 Reasonable and Prudent Alternatives (RPA) actions. One of these RPAs, Action 149, states that the BOR

> "shall initiate programs in three priority subbasins (identified in the Basinwide Recovery Strategy) per year over 5 years, in coordination with NMFS, FWS (U.S. Fish and Wildlife Service), the states, and others, to address all flow, passage, and screening problems in each subbasin over 10 years... This action initiates immediate work in three such subbasins per year, beginning in the first year with the Lemhi, Upper John Day, and Methow subbasins."

In keeping with the intent of the FCRPS Opinion, BOR followed up the work in the initial subbasins by drafting "Evaluations of Six Priority Subbasins for the Implementation of 1-Year Plans in Fiscal Year 2002" (BOR 2001). Included under this plan, the Upper Salmon River subbasin was identified, and included the EFSR and Herd Creek. Under the "All-H" approach outlined by the Federal Caucus (2000), the improvement of irrigation diversions and removal of impediments to anadromous fishes passage in the Snake River Basin (including the EFSR) fits into the habitat strategies that help meet the requirements of the FCRPS Opinion and RPA Action 149. As active participants in the Model Watershed Plan (Plan) (ISSC 1995) that addresses the EFSR subbasin as well as the Lemhi River and Pahsimeroi River subbasins, the BOR and BPA help set the annual project and funding priorities for the Model Watershed (now known as the Upper Salmon Basin Watershed Project). The priority goal of the Plan is to provide "...for the safe and timely passage of migrating fish through critical reaches of the watershed" (ISCC 1995), while protecting and enhancing water quality, and minimizing the loss of migrating fish caused by irrigation diversions. An action plan for the EFSR was developed and the highest priority goals for this watershed include reducing the number of fish passage obstructions and decreasing the number of unscreened water diversion structures on the mainstem and tributaries of the East Fork.

The BPA provided a biological assessment (BA) for the proposed action dated May 1, 2003. On June 12, 2003, NOAA Fisheries requested additional information on the proposed project. NOAA Fisheries received the requested additional information for SEF 12 on June 19, 2003; and consultation was initiated at that time. The BOR provided a draft copy of contract documents and specifications in June 2003 (BOR 2003a). An interagency government-to-government meeting was held in the Salmon Field Office of NOAA Fisheries on June 19, 2003 to discuss the SEF 12 Project and related East Fork and Herd Creek diversion removal, replacement, and modification projects. Attending in person or via conference call were representatives of the BPA, BOR, NOAA Fisheries, USFWS, NRCS, the District, and the Shoshone-Bannock Tribes. The meeting agenda was divided into two major parts: administrative, including funding options, and technical review of engineering designs and plans. Modifications to a proposed structure for returning water to the EFSR from the SEF 12 Diversion were agreed to by the engineers representing the BOR, NRCS, and NOAA Fisheries, and were adopted by consensus by the meeting participants. The modifications would create a larger pool for adult chinook salmon and steelhead staging, and would prevent juvenile anadromous salmonids and other fishes from being harmed or killed by spilling from the diversion structure back to the river onto exposed rocks. The BPA will submit to NOAA Fisheries a revised BA for the proposed action based on NOAA Fisheries information requests and reviews that reflect the June 19, 2003 interagency negotiations and consensus before construction starts. The June 19 agreements are considered part of the proposed action and are analyzed as such in this Opinion. If the revised BA does not reflect those agreed-on components of the action analyzed in this Opinion, this may trigger Reinitiation of Consultation (refer to section 2.5, below).

The SEF 12 Project would likely affect tribal trust resources. Because the action is likely to affect tribal trust resources, NOAA Fisheries has contacted the Shoshone-Bannock Tribes and Nez Perce Tribe pursuant to the Secretarial Order (June 5, 1997). The Shoshone-Bannock Tribes expressed interest in this consultation and a tribal representative participated in an interagency consultation meeting on June 19, 2003. The tribal representative found no technical problems with this Opinion; however, the Shoshone-Bannock Tribal Council has not formally voiced its views on the SEF 12 Project.

1.2 Proposed Action

Proposed actions are defined in the Services' consultation regulations (50 CFR 402.02) as "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas." Additionally, U.S. Code (16 U.S.C. 1855(b)(2)) further defines a Federal action as "any action authorized, funded, or undertaken or proposed to be authorized, funded, or undertaken by a Federal agency." Because the BPA proposes to fund the action that may affect listed resources, it must consult under ESA section 7(a)(2) and MSA section 305(b)(2).

The purpose of the proposed action is to improve passage for all life stages of anadromous and resident fish species. To accomplish this, the project will replace the existing SEF 12 push-up gravel dam that impedes anadromous fish passage, and requires regular instream mechanized maintenance and repairs with a permanent rock weir that also spans the East Fork. To enable fish passage during low flows, a 6-foot wide metal notch will be installed near the left bank, with the notch 12 inches below the crest of the dam. The upstream side of the weir is designed at a 2:1 slope. An impervious membrane and flexible geotextile liner will be installed in the diversion structure wing, parallel to the stream bank. The membrane will extend 10 to 20 feet upstream of the weir to reduce seepage under the structure and bring water to the surface and through the fish notch. Thus, fish passage will be enabled during low flow conditions. Rock material will be placed over the membrane to hold it in place and add integrity to the structure.

Conservation measures that were identified by BPA include:

1. In-channel work will take place from July 7 to August 15. Fish passage and sediment control structures and provisions will be in place at all times.

2. Project inspection will be provided by the District, NRCS, and the BOR during the construction period.

3. Best Management Practices (BMPs) appropriate to the type of work being performed will be in place at all times when work is being performed (IDEQ 1997).

4. Staging and storage areas for vehicles and equipment will be at least 100 feet from any waterway or wetland area.

5. Heavy equipment left on site will use drip pans as necessary to minimize soil contamination from leaks.

6. All fuel and petroleum products will be stored at least 100 feet from existing waterways and wetlands, if they are stored on site.

7. Equipment used in the river will be inspected each day and whenever fueling takes place to ensure there are no leaks from hydraulic lines or other locations on the equipment. Any leaks found will be fixed prior to the equipment entering the streambed to work.

8. Emergency spill containment equipment will be available at all times to manage any petroleum product spills or leaks that may occur. If a spill or leak should occur it will be cleaned up immediately and the appropriate officials notified.

9. No chemical dust suppressants will be used within 25 feet of any waterway. The use of water for dust suppression is preferred. Water will only be drawn from a site approved by NOAA Fisheries and/or USFWS fisheries biologists. Water drawn from any location other than immediately below the fish screen will use 3/32 inch screens on the intake hose.

10. Areas disturbed by construction will be replanted and/or reseeded by the beginning of the next growing season, or at the end of the project if there is sufficient growing time before the onset of cold weather. Site reclamation will include replanting with native vegetation similar to what was removed during construction. Recommendations for types of species to plant, timing of planting and additional technical information are referenced in Technical Bulletins 24, 32, and 38 in the Idaho Best Management Practices publication (IDEQ 1997). The recommendations from these Technical Bulletins will guide the revegetation at these project sites. Specific timing and species used will be coordinated with the landowner, NOAA Fisheries and USFWS prior to implementation.

11. Fish salvage operations in coordination with Idaho Department of Fish and Game (IDFG), USFWS, and NOAA Fisheries will be conducted (if necessary), as agreed to by BPA, BOR, and their contractors at the June 19 interagency meeting and consensus agreement that is deemed part of the proposed action.

12. All construction and design criteria developed for the project will be implemented as stated in the SEF 12 Diversion and Modifications contract documents and specifications (BOR 2003a; BOR 2003b).

    a. In the event that there are changes in the project plan, NOAA Fisheries and USFWS will be notified may be reinitiated as described below (section 2.5).

1.3 Description of the Action Area

An action area is defined by the Services' regulations (50 CFR Part 402) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The action area starts at about 100 yards upstream of river mile 15, downstream through the project location on the EFSR in T.9N., R.17E., Section 1, Custer County, Idaho, and to about 0.5 miles downstream of river mile 15. Since the East Fork carries substantial flows throughout the year (mean monthly January flow of 79.0 cubic feet per second (cfs) for 1928-1981) (USGS 2003) and the transient nature of the instream construction for the permanent replacement of the SEF 12 Diversion structure will be mitigated by temporary coffer dams and other BMPs for controlling sedimentation, the impacts of increased turbidity, siltation, and the filling of gravel interstitial space with fine sediments should be negligible in the lower reaches of the EFSR and the mainstem Salmon River, downstream of their confluence. The attenuating factors from downstream sedimentation impacts results in the exclusion of these stream reaches from the action area. The fifth field hydrologic unit code (HUC) encompassing the action area is 1706020109. This area serves as a migratory corridor for Snake River spring/summer chinook salmon and Snake River Basin steelhead juveniles and adults, spawning and rearing, and growth and development to adulthood for EFH and the salmonid Evolutionarily Significant Units (ESUs) (Reeves et al., 1995).

This stream reach is occupied by all life stages of Snake River spring/summer chinook salmon and Snake River Basin steelhead and is designated critical habitat for Snake River spring/summer chinook salmon. Snake River sockeye salmon do not occur in the EFSR.

2. ENDANGERED SPECIES ACT - BIOLOGICAL OPINION

The objective of this Opinion is to determine whether the SEF 12 Project is likely to jeopardize the continued existence of the Snake River spring/summer chinook salmon and Snake River steelhead or destroy or adversely modify the designated critical habitat of chinook salmon.

2.1 Evaluating the Effects of the Proposed Action

The standards for determining jeopardy and destruction or adverse modification of critical habitat are set forth in section 7(a)(2) of the ESA. In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the following steps of the consultation regulations and when appropriate[1] combines them with The Habitat Approach (NMFS 1999):
(1) Consider the biological requirements and status of the listed species; (2) evaluate the relevance of

[1]The Habitat Approach is intended to provide guidance to NOAA Fisheries staff for conducting analyses, and to explain the analytical process to interested readers.

the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species, and whether the action is consistent with any available recovery strategy; and (4) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the effects of the environmental baseline, and any cumulative effects, and considering measures for survival and recovery specific to other life stages. In completing this step of the analysis, NOAA Fisheries determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the ESA-listed species or result in the destruction or adverse modification of critical habitat. If jeopardy or adverse modification is found, NOAA Fisheries may identify reasonable and prudent alternatives for the action that avoid jeopardy and/or destruction or adverse modification of critical habitat.

The fourth step above (jeopardy/adverse modification analysis) requires a two-part analysis. The first part focuses on the action area and defines the proposed action's effects in terms of the species' biological requirements in that area (i.e., effects on essential features). The second part focuses on the species itself. It describes the action's effects on individual fish, populations, or both, and places that impact in the context of the ESU as a whole. Ultimately, the analysis seeks to determine whether the proposed action is likely to jeopardize a listed species' continued existence or destroy or adversely modify its critical habitat.

2.1.1 Biological Requirements

The first step NOAA Fisheries uses when applying ESA section 7(a)(2) to the listed ESUs considered in this Opinion includes defining the species' biological requirements within the action area. Biological requirements are population characteristics necessary for the listed ESUs to survive and recover to naturally reproducing population sizes at which protection under the ESA would become unnecessary. The listed species' biological requirements may be described as characteristics of the habitat, population or both (McElhany *et al.* 2000).

NOAA has identified population size biological requirements through interim recovery targets. The target for Snake River steelhead in this watershed is 4,700 adult spawners, while the target for spawning adult Snake River spring/summer chinook salmon for the Upper Salmon River subbasin is 5,100 fish (NMFS 2002).

For actions that affect freshwater habitat, NOAA Fisheries may describe the habitat portion of a species' biological requirements in terms of a concept called properly functioning condition (PFC). The PFC is defined as the sustained presence of natural[2] habitat-forming processes in a watershed that are

[2]The word "natural" in this definition is not intended to imply "pristine," nor does the best available science lead us to believe that only pristine wilderness will support salmon.

necessary for the long-term survival of the species through the full range of environmental variation (NMFS 1999). The PFC, then, constitutes the habitat component of a species' biological requirements. Although NOAA Fisheries is not required to use a particular procedure to describe biological requirements, it typically considers the status of habitat variables in a matrix of pathways and indicators (MPI) (NMFS (1996b) that were developed to describe PFC in forested montane watersheds. Appendix E presents the MPI developed for the SEF 12 Project. In the PFC framework, baseline environmental conditions are described as "properly functioning," "at risk," or "not properly functioning."

The SEF 12 Project would occur within designated critical habitat for the Snake River spring/summer chinook salmon ESU. Freshwater critical habitat can include all waterways, substrates, and adjacent riparian areas[3] below longstanding, natural impassable barriers (i.e., natural waterfalls in existence for at least several hundred years) and dams that block access to former habitat (see citations in Table 1).

Essential features of critical habitat for the listed species are: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food (juvenile only), (8) riparian vegetation, (9) space, and (10) safe passage conditions. For this consultation, the essential features that function to support successful adult and juvenile migration, adult holding, spawning, incubation, rearing, and growth and development to adulthood include substrate, water quality, water quantity, water temperature, water velocity, and safe passage conditions. These essential features of critical habitat are included in the MPI (NMFS 1996b) (discussed in more detail in Section 2.2.1 and Appendix E).

2.1.2 Status and Generalized Life History of Listed Species

In this step, NOAA Fisheries also considers the current status of the listed species within the action area, taking into account population size, trends, distribution, and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the species and also considers any new data that is relevant to the species' status. Please refer to Appendices A and B (online at: http://www.nwr.noaa.gov/1habcon/habweb/habguide/appendix_a_june2001.pdf), which include a discussion of the general life history of the listed species.
The BPA found that the SEF 12 Project may affect, but is not likely to adversely affect the Snake River Basin steelhead and Snake River spring/summer chinook salmon and designated critical habitat for chinook salmon identified in Table 1. Based on the life histories of these ESUs, the BPA determined that it is not likely that incubating eggs, alevins, juveniles, smolts, and adults life stages of these listed species would be adversely affected by the proposed modifications to the SEF 12 Diversion structure.

[3]Riparian areas adjacent to a stream provide the following functions: shade, sediment delivery/filtering, nutrient or chemical regulation, streambank stability, and input of large woody debris and fine organic matter.

NOAA Fisheries determined, however, that because of the close proximity of historic and recent redds, the presence of juvenile fish, the extensive instream work proposed, and experiences with similar projects in the Salmon River Basin at a similar magnitude of disturbance, adverse effects on those ESUs are likely; therefore, formal consultation and a Biological Opinion are required.

Table 1. References for additional background on listing status, critical habitat designation, protective regulations, and life history for the ESA-listed and candidate species considered in this consultation.

SPECIES ESU	STATUS	CRITICAL HABITAT DESIGNATION	PROTECTIVE REGULATIONS	LIFE HISTORY
Snake River spring/summer chinook salmon (*Oncorhynchus tshawytscha*)	Threatened; April 22, 1992; 57FR 14653[4]	October 25, 1999; 64 FR 57399[5]	July 10, 2000; 65 FR 42422	Matthews and Waples 1991; Healey 1991
Snake River Basin steelhead (*O. mykiss*)	Threatened; August 18, 1997; 62 FR 43937	February 16, 2000; 65 FR 7764[6]	July 10, 2000; 65 FR 42422	Busby et al. 1996; Fish Passage Center 2001a&b; BRT 1998

2.1.2.1 Snake River Spring/Summer Chinook Salmon

The Snake River spring/summer chinook salmon ESU, listed as threatened on April 22, 1992 (67 FR 14653), includes all natural-origin populations in the Tucannon, Grande Ronde, Imnaha, and Salmon Rivers. Some or all of the fish returning to several of the hatchery programs are also listed including those returning to the Tucannon River, Imnaha, and Grande Ronde hatcheries, and to the Sawtooth, Pahsimeroi, and McCall hatcheries on the Salmon River. Critical habitat was designated for Snake River spring/summer chinook salmon on December 28, 1993 (58 FR 68543) and was revised on October 25, 1999 (64 FR 57399).

Historically, the Snake River drainage is thought to have produced more than 1.5 million adult spring/summer chinook salmon in some years during the late 1800s (Matthews and Waples 1991). By

[4]Also see, June 3, 1992, 57 FR 23458, correcting the original listing decision by refining ESU ranges.

[5]This corrects the original designation of December 28, 1993, 58 FR 68543 by excluding areas above Napias Creek Falls, a naturally impassable barrier to fish migration.

[6]Critical habitat for Snake River Basin steelhead trout was administratively withdrawn on April 30, 2002 and therefore, critical habitat is not designated at this time.

the 1950s the abundance of spring/summer chinook had declined to an annual average of 125,000 adults and by the mid-1960s, further declines to an average of about 60,000 adults. Adult returns counted at Lower Granite Dam reached all-time lows in the mid-1990s, and numbers have begun to increase since 1997. Over a 10-year period from 1992 to 2001, which includes the year of listing (1992), returns of wild/natural fish ranged from 183 in 1994 to 12,475 in 2001, and averaged 3,314 salmon adults. The estimated smolt production capacity of 10 million smolts for rivers in Idaho, coupled with historic smolt to adult return rates of two percent to six percent, indicate Idaho could produce wild/natural runs of 200,000 to 600,000 adults (Fish Passage Center 2002). The recent low numbers are reflected throughout the entire distribution of chinook salmon subpopulations scattered throughout the Grande Ronde, Imnaha, Tucannon, and Salmon River Basins. Redd counts and estimates of parr and smolt densities generally indicate that fish production is well-below the potential, and continuing to decline.

These generalizations for the entire Snake River Basin hold true for the EFSR subbasin. The 11 miles of adequate spawning habitat in the East Fork watershed should be capable of producing 720,000 smolts per year (based on an assumption of 200 adult fish per mile and an egg-to-smolt survival rate of 15 %) (ISCC 1995).

Although there were record returns in 2000 and 2001, numbers are in general very low in comparison to historic levels (Bevan et al. 1994). Average returns of adult Snake River spring/summer chinook salmon (averaging 3,314 over a recent 10-year period) are also low in comparison to interim target species recovery levels of 44,766 for the Snake River Basin (April 4, 2002, Interim Abundance and Productivity Targets for Interior Columbia Basin Salmon and Steelhead Listed under the ESA, NMFS 2002). The low returns amplify the importance that a high level of protection be afforded to each adult chinook salmon, particularly because a very small percentage of salmon survive to the life stage of a returning, spawning adult, and because these fish are in the final stage of realizing their reproductive potential (approximately 2,000 to 4,000 progeny per adult female).

Habitat impairment is common in the range of this ESU. Spawning and rearing habitats are likely impaired by factors such as tilling, water withdrawals, timber harvest, grazing, mining, and alteration of floodplains and riparian vegetation. Mainstem Columbia River and Snake River hydroelectric developments have altered flow regimes and estuarine habitat, and disrupted migration corridors. Competition between natural indigenous stocks of spring/summer chinook salmon and spring/summer chinook of hatchery origin has likely increased due to an increasing proportion of naturally-reproducing fish of hatchery origin.

Compared to the greatly reduced numbers of returning adults for the last several decades, exceptionally large numbers of adult chinook salmon returned to the Snake River drainage in 2000 and in 2001. These large returns are thought to be a result of favorable ocean conditions, and above average flows in the Columbia River Basin when the smolts migrated downstream. These large returns are only a fraction of the estimated returns of the late 1800s. Recent increases in the population are not expected to

continue, and the long-term trend for this species indicates a decline. Detailed information on the current range-wide status of Snake River chinook salmon under the environmental baseline, is described in a chinook salmon status review (Myers et al. 1998). Habitat improvements would not necessarily correspond to increased salmon productivity because a myriad of other factors can still depress populations, but diminished quality would probably correspond to reduced productivity (Regetz 2003).

2.1.2.2 Snake River Basin Steelhead

The Snake River Basin steelhead ESU, listed as threatened on August 18, 1997 (62 FR 43937), includes all natural-origin populations of steelhead in the Snake River basin of Southeast Washington, northeast Oregon, and Idaho. None of the hatchery stocks in the Snake River basin are listed, but several are included in the ESU. Critical habitat for Snake River Basin steelhead was administratively withdrawn on April 30, 2002, therefore critical habitat is not designated at this time.

Natural runs of Snake River Basin steelhead have been declining in abundance over the past decades. Some of the significant factors in the declining populations are mortality associated with the many dams along the Columbia and Snake Rivers, losses from harvest, loss of access to more than 50 percent of their historic range, and degradation of habitats used for spawning and rearing. Possible genetic introgression from hatchery stocks is another threat to Snake River Basin steelhead since wild fish comprise such a small proportion of the population. Additional information on the biology, status, and habitat elements for Snake River Basin steelhead are described in Busby et al. (1996).

The 2000 and 2001 counts at Lower Granite Dam indicate a short-term increase in returning adult spawners. Adult returns (hatchery and wild) in 2001 were the highest in 25 years and 2000 counts were the sixth highest on record (Fish Passage Center 2001a). Increased levels of adult returns are likely a result of favorable ocean and instream flow conditions for these cohorts. Although steelhead numbers have dramatically increased, wild steelhead comprise only 10-20 percent of the total returns since 1994. Consequently, the large increase in fish numbers does not reflect a change in steelhead status based on historic levels. Recent increases in the population are not expected to continue, and the long-term trend for this species indicates a decline.

Survival of downstream migrants in 2001 was the lowest level since 1993. Low survival was due to record low run-off volume and elimination of spills from the Snake River dams to meet hydropower demands (Fish Passage Center 2001b). Average downstream travel times for steelhead nearly doubled and were among the highest observed since recording began in 1996. Consequently, wide fluctuations in population numbers are expected over the next few years when adults from recent cohorts return to spawning areas. Detailed information on the current range-wide status of Snake River Basin steelhead, under the environmental baseline, is described in steelhead status review (Busby et el.

1996), and status review update (BRT 1998). Please see Appendix B for more information.

2.1.3 Environmental Baseline in the Action Area

The environmental baseline is defined as: "the past and present impacts of all Federal, state, or private actions and other human activities in the action area, including the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation and the impacts of state and private actions that are contemporaneous with the consultation in progress" (50 CFR 402.02). In step 2, NOAA Fisheries' evaluates the relevance of the environmental baseline in the action area to the species' current status. In describing the environmental baseline, NOAA Fisheries evaluates essential features of designated critical habitat and the listed Pacific salmon ESUs affected by the proposed action. The action area is described in section 1.3 of this document.

In general, the environment for listed species in the Columbia River Basin (CRB), including those that migrate past or spawn upstream from the action area, has been dramatically affected by the development and operation of the FCRPS. Storage dams have eliminated mainstem spawning and rearing habitat, and have altered the natural flow regime of the Snake and Columbia Rivers, decreasing spring and summer flows, increasing fall and winter flow, and altering natural thermal patterns. Power operations cause fluctuation in flow levels and river elevations, affecting fish movement through reservoirs, disturbing riparian areas and possibly stranding fish in shallow areas as flows recede. The eight dams in the migration corridor of the Snake and Columbia Rivers kill or injure a portion of the smolts passing through the area. The low velocity movement of water through the reservoirs behind the dams slows the smolts' journey to the ocean and enhances the survival of predatory fish (Independent Scientific Group 1996, National Research Council 1996). Formerly complex mainstem habitats in the Columbia, Snake, and Willamette Rivers have been reduced, for the most part, to single channels, with floodplains reduced in size, and off-channel habitats eliminated or disconnected from the main channel (Sedell and Froggatt 1984; Independent Scientific Group 1996; and Coutant 1999). The amount of large woody debris in these rivers has declined, reducing habitat complexity and altering the rivers' food webs (Maser and Sedell 1994).

Other human activities that have degraded aquatic habitats or affected native fish populations in the CRB include stream channelization, elimination of wetlands, construction of flood control dams and levees, construction of roads (many with impassable culverts), timber harvest, splash dams, mining, water withdrawals, unscreened water diversions, agriculture, livestock grazing, urbanization, outdoor recreation, fire exclusion/suppression, artificial fish propagation, fish harvest, and introduction of non-native species (Henjum *et al.* 1994; Rhodes *et al.* 1994; National Research Council 1996; Spence *et al.* 1996; and Lee *et al.* 1997). In many watersheds, land management and development activities have: (1) reduced connectivity (i.e., the flow of energy, organisms, and materials) between streams, riparian areas, floodplains, and uplands; (2) elevated fine sediment yields, degrading spawning and rearing habitat; (3) reduced large woody material that traps sediment, stabilizes streambanks, and helps

form pools; (4) reduced vegetative canopy that minimizes solar heating of streams; (5) caused streams to become straighter, wider, and shallower, thereby reducing rearing habitat and increasing water temperature fluctuations; (6) altered peak flow volume and timing, leading to channel changes and potentially altering fish migration behavior; and (7) altered floodplain function, water tables and base flows (Henjum *et al.* 1994; McIntosh *et al.* 1994; Rhodes *et al.* 1994; Wissmar *et al.* 1994; National Research Council 1996; Spence *et al.* 1996; and Lee *et al.* 1997).

To address problems inhibiting salmonid recovery in CRB tributaries, the Federal resource and land management agencies developed the *All H Strategy* (Federal Caucus 2000). Components of the *All H Strategy* commit these agencies to increased coordination and a fast start on protecting and restoring.

Pacific salmon populations also are substantially affected by variation in the freshwater and marine environments. Ocean conditions are a key factor in the productivity of Pacific salmon populations. Stochastic events in freshwater (flooding, drought, snowpack conditions, volcanic eruptions, etc.) can play an important role in a species' survival and recovery, but those effects tend to be localized compared to the effects associated with the ocean. The survival and recovery of these species depends on their ability to persist through periods of low natural survival due to ocean conditions, climatic conditions, and other conditions outside the action area. Freshwater survival is particularly important during these periods because enough smolts must be produced so that a sufficient number of adults can survive to complete their oceanic migration, return to spawn, and perpetuate the species. Therefore it is important to maintain or restore essential features and PFC in order to sustain the ESU through these periods (Reeves et al. 1995). Additional details about the importance of freshwater survival to Pacific salmon populations can be found in Federal Caucus (2000), NMFS (2000), and Oregon Progress Board (2000).

The EFSR watershed drains approximately 560 square miles (Emmett 1975; USDI-BLM 1998) between the Sawtooth Mountain range and the White Cloud Peaks range, with a length of about 42 miles. As a seventh-order stream and a major tributary of the Salmon River, the East Fork consists of about 1,441 different stream channels with the average length of a first order stream of about 0.6 miles. This accounts for a total of 1,416 miles of stream channel within the drainage area of the EFSR (Emmett 1975). Elevations range from 5,377 feet above mean sea level (amsl) at the confluence with the Salmon River (River Mile 343), 18 miles south of the town of Challis and five miles east of Clayton (Custer County, Idaho), to over 11,800 feet amsl in the Sawtooth Wilderness. Within the basin, the East Fork mainstem has an average gradient of about one percent and an average channel width of 40 to 60 feet. The major tributaries of the EFSR watershed are relatively small in width (from 7 to 19 feet) with relatively steep gradients (4 to 5 percent).

Average annual precipitation ranges from 7.5 inches at lower elevations near Challis (lowest in Idaho) to 25 inches in the mountains, with an estimated average of 10 to 15 inches (USDI-BLM 1998). Severe winters with six or more feet of snow accumulated at the higher elevations are possible, while

snow fall near the mouth is less, but more variable. Most of the land immediately adjacent to the EFSR and its major tributaries is in private ownership, while the Bureau of Land Management (BLM) manages the land at the mid-elevations and the U.S. Forest Service (USFS) manages the high elevation forests and meadows, including the headwaters contained in the Sawtooth National Recreation Area and Sawtooth Wilderness. Portions of the BLM lands are within a wilderness study area and much of the East Fork watershed are in the White Cloud and Boulder Mountain proposed wilderness areas. State-owned lands (14 mile square sections) are scattered throughout the basin (USDI-BLM 1999).

Historic annual peak flows of EFSR downstream from its confluence with Big Boulder Creek to its mouth at the Salmon River range from 1,200 cfs to 3,500 cfs (IDEQ 2003a). Human activities since the mid-1800s are likely to have changed the hydrology of the EFSR as a result of beaver trapping and dam removal, stream channel alterations, rip-rapping of banks, riparian vegetation removal, and diversion of flows for irrigation and livestock watering. Limiting streamflow access to the floodplain has changed the hydrography of the river system from one that slowly releases upgradient stored water to one that releases water within a shortened time frame ("flashy"). The results of these modifications are reflected in a degraded aquatic habitat for ESA-listed anadromous salmonids with lower late summer flows and higher water temperatures (USDI-BLM 1998). Attenuation of flow fluctuations has reduced the ability of the East Fork to maintain its historic natural features, thereby reducing the number and quality of deep pools and meanders, which provide high quality fish habitat.

Riparian habitats in the East Fork watershed include not only riverine and lacustrine ecosystems, but also the vegetation associated with seeps, springs, wet meadows, bogs, and ponds (USDI-BLM 1998). The community plant structure within the riparian zone varies based on the frequency of flooding, amount of scouring, and the intensity of human disturbance (past and current). Much of the riparian lands along EFSR (approximately 6,400 acres) and its tributaries are dedicated to livestock and forage production and includes extensive water diversion and conveyance systems. According to the USFS and BLM (1998), there are 33 private stream diversions within the East Fork watershed, most of which are protected by fish screens of various ages. Unscreened diversions are on smaller tributaries such as Fox, Pine, and McDonald creeks. According to Trapani (2002), two diversions were consolidated and an improved weir was
installed to improve fish passage in this reach of EFSR. Fencing projects to exclude livestock grazing and bank destruction in the riparian zone for 3.6 miles of the 10.2 mile reach has resulted in some improvements to the degraded riparian habitat.

Historically, gold mining in the 1860s occurred in the watershed, with the Livingston Mine on Big Boulder Creek the most notable. A dam built on the creek for power generation for mine operations blocked fish migrations for many decades and was finally removed in 1991. Sedimentation and heavy metal contamination of Big Boulder Creek, East Fork and the mainstem Salmon River resulted from more than 50 years of gold mining.

Te Idaho Department of Environmental Quality (IDEQ) classifies the EFSR as a cold water aquatic

community, which supports salmonid spawning in the state's surface water quality standards (IDEQ 2003b). The East Fork is also designated as primary contact recreation (PCR) waters and receives a high level of water quality protection under standards designed to protect domestic drinking water supply and special resource waters designated uses. The East Fork and its tributaries were not included in the 1998 303(d) list of impaired stream segments for the Upper Salmon subbasin (IDEQ 2003a).

The East Fork has a long history of anadromous fish runs by spring/summer chinook salmon and steelhead (ISCC 1995; Trapani 2002). Average annual chinook salmon redd counts for the period between 1957 and 1969 was 675, with a maximum of 1,177 (Trapani 2002). From 1957 to 1962, redd counts for the steelhead and chinook salmon ESUs averaged 1,385 redds per year within the East Fork watershed, which accounts for about 34 % of the total redd counts for these two ESA-listed ESUs in the Upper Salmon River Basin during the same time period (ISCC 1995). During the period between 1977 and 1981, East Fork spring/summer chinook and steelhead redds accounted for 19 % of the combined total (chinook and steelhead) of Upper Salmon River Basin redds. Since 1981, the percentage has continued to decline to 10 % or less (ISCC 1995). Chinook salmon redd counts accounted for about 49 percent of the total redds annually between 1957 and 1962 (Trapani 2002).

IDFG maintains a fish weir on the East Fork about 0.25 miles upstream of the confluence with Big Boulder Creek. The circa-1984 weir is used to trap adult steelhead to collect eggs (chinook salmon collection suspended in 1997) for the supplementation program at the Sawtooth Hatchery (IDFG personal communication; ISCC 1995).

The NOAA Fisheries MPI (NMFS 1996b) provides a tool for assessing the current conditions of various chinook salmon and steelhead trout habitat parameters in the EFSR watershed. Use of the matrix identified all habitat indicators as either at risk or not properly functioning within the action area (Appendix E).

Fisheries habitat within the East Fork watershed is generally divided into three principle stream segments: (1) mouth of the river to Herd Creek, approximately 10.3 miles long, (2) Herd Creek to Little Boulder Campground, approximately 10.2 miles long, and (3) Herd Creek, approximately 6 miles long (ISCC 1995; IMWP 2000; Trapani 2002). The proposed project is about 100 yards downstream of River Mile 15 or 5 miles upstream of Herd Creek in East Fork segment 2. Idaho Department of Fish and Game (IDFG 2002) 2002 survey data show approximately 82 redds in the 6 miles above Herd Creek in segment 2; seven redds, three upstream and four downstream, are in the vicinity of the SEF 12 Project. According to the BA, there were no redds at the existing SEF 12 Diversion structure.

The EFSR is critical for the recovery and enhancement of anadromous fish stocks in the Upper Salmon River basin. Historically, the East Fork watershed supported large runs of both chinook salmon and steelhead. IDFG fish biologists rate the East Fork with excellent spawning potential, especially for

chinook salmon (USDI-BLM 1999). The stream habitat inventory that was completed by Trapani (2002) in 1994 reveals that the anadromous fish habitat in the East Fork has great potential to support historical salmon runs and unlike other major Upper Salmon River basin tributaries, is not limited by high water temperatures, low flow conditions, or high embeddedness due to fine sediments. Cobble embeddedness in the mainstem East Fork is approximately 26 % (Trapani 2002). Bank stability of this reach of the EFSR was rated as
66 % stable in 1994 (Trapani 2002). Large substrate deposits from upstream cause numerous bar complexes and channel shifts resulting in significant bank erosion (Trapani 2002). Physical barriers to anadromous fish migrations from irrigation diversions and road crossings and
sedimentation associated with repeated repairs to push-up dams and bank erosion, in part to livestock grazing are identified as habitat impairments by the MPI and functioning at unacceptable risk in the case of fish passage (Appendix D).

Completed projects in the watershed include the Herd Creek Bridge Replacement Project, which was finished in 2000 under an individual project consultation between the BLM and NOAA Fisheries. The BLM found that the bridge replacement did not affect the overall baseline conditions in Herd Creek and the downstream reaches of the East Fork and mainstem Salmon River (USDI-BLM 2002). Ongoing grazing in the East Fork, Herd Creek, and other basin allotments continue to degrade riparian vegetation, bank stability, water temperatures, and water quality. The area between Marco Creek and Cherry Gulch is maintained as bighorn sheep winter range and is excluded from livestock grazing. Other proposed projects to improve existing diversion and conveyance systems similar to SEF 12 are proposed at SEF 10 and SEF 11 and Herd Creek (HC) 1 and HC 2. Under the Model Watershed Plan (Upper Salmon Basin Watershed Project), bank stabilization projects (6 miles), livestock grazing exclusion fencing (3.6 miles), irrigation diversion consolidation and removal of fish passage obstructions (2), and a tributary reconnect project by reserving flows for a former flood irrigation system converted to a sprinkler system were completed (IMWP 2000; Trapani 2002).

2.2 Analysis of Effects

Effects of the action are defined as: "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with the action, that will be added to the environmental baseline" (50 CFR 402.02). Direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing the value of habitat for meeting the species' biological requirements or impairing the essential features of critical habitat. Indirect effects are defined in 50 CFR 402.02 as "those that are caused by the proposed action and are later in time, but still are reasonably certain to occur." They include the effects on listed species or critical habitat of future activities that are induced by the proposed action and that occur after the action is completed. "Interrelated actions are those that are part of a larger action and depend on the larger action for their justification" (50 CFR 403.02). "Interdependent actions are those that have no independent utility apart from the action under consideration" (50 CFR 402.02).

In step 3 of the jeopardy and adverse modification analysis, NOAA Fisheries evaluates the effects of proposed actions on listed species and seeks to answer the question of whether the species can be expected to survive with an adequate potential for recovery. In watersheds where critical habitat has been designated, NOAA Fisheries must make a separate determination of whether the action will result in the destruction or adverse modification of critical habitat (ESA, section 3, (3) and section 3(5A)).

2.2.1 Habitat Effects (which may also affect listed species)

NOAA Fisheries will consider any scientifically credible analytical framework for determining an activity's effect. In order to streamline the consultation process and to lead to more consistent effects determinations across agencies, NOAA Fisheries where appropriate recommends that action agencies use the MPI and procedures in NMFS (1996b), particularly when their proposed action would take place in forested montane environments. NOAA Fisheries is working on similar procedures for other environments. Regardless of the analytical method used, if a proposed action is likely to impair properly functioning habitat, appreciably reduce the functioning of already impaired habitat, or retard the long-term progress of impaired habitat toward PFC, it cannot be found consistent with conserving the species.

For the streams typically considered in salmon habitat-related consultations, a watershed is a logical unit for analysis of potential effects of an action (particularly for actions that are large in scope or scale). Healthy salmonid populations use habitats throughout watersheds (Naiman *et al*. 1992), and riverine conditions reflect biological, geological and hydrological processes operating at the watershed level (Nehlsen 1997; Bisson *et al*. 1997; and NMFS 1999).

Although NOAA Fisheries prefers watershed-scale consultations due to greater efficiency in reviewing multiple actions, increased analytic ability, and the potential for more flexibility in management practices, often it must analyze effects at geographic areas smaller than a watershed or basin due to a proposed action's scope or geographic scale. Analyses that are focused at the scale of the site or stream reach may not be able to discern whether the effects of the proposed action will contribute to or be compounded by the aggregate of watershed impacts. This loss of analytic ability typically should be offset by more risk averse proposed actions and ESA analysis in order to achieve parity of risk with the watershed approach (NMFS 1999).

The SEF 12 Project BA provides an analysis of the effects of the proposed action on Snake River spring/summer chinook salmon and Snake River Basin steelhead and the critical habitat for chinook salmon in the action area. The analysis uses the MPI (Appendix D) and procedures in NMFS (1996b), the information in the BA, and the best scientific and commercial data available to evaluate elements of the proposed action that have the potential to affect the listed fish or essential features of their critical habitat.

Direct effects from the project include instream installation work to remove the existing rock push-up dam and install the rock weir, "T"plates (a type of metal water control gate structure), and geotextile membrane. This action would likely cause a short-term increase in turbidity and sedimentation of the substrate at and below the work site, and could disrupt migration and mainstem spawning activities or the development of fish redds. Operations of the permanent replacement SEF 12 Diversion structure should allow additional fish passage during low flow periods and eliminate periodic (at least annual) instream maintenance and/or replacement of the diversion structure and the associated downstream disturbances with installing push-up dams. As this is an engineering design custom made for the SEF 12 Diversion structure, it remains somewhat unknown in how it performs in terms of downstream effects of sedimentation, turbidity and for upstream and downstream anadromous fishes passage. If the design does not perform as expected in the BA and Contract Documents, reinitiation of consultation with NOAA Fisheries may be required and additional design modifications may be necessary. Work will take place between July 7 and August 15 to avoid direct effects on spawning activities and salmonid redds, and fish passage will not be blocked during construction. Downstream (and potentially upstream) effects include short-term streambed changes that reduce hiding and resting cover in the immediate project area, thus increase stress on upstream migrants as they move through the section of river to spawning habitat. Installation and removal of the temporary coffer dams will increase sediment inputs in the short-term. Construction during low water conditions, the use of coffer dams to work under dry conditions, and the use of BMPs will minimize the amount of sediment introduced to the water column and the stream substrate.

Additionally, as an indirect effect of the SEF 12 Project, existing refugia and resting cover for fry, juveniles, and adults will be disturbed, but will reestablish as the channel adjusts to the changes. Instream habitat will be improved by the construction of the weirs because of the scour pools that will be installed below each weir. The legs of the weirs will also establish new resting areas, particularly for juveniles and adults.

Effects of the SEF 12 Project by essential feature include:

1. Substrate: The primary concern is potential recruitment of fine sediments into the EFSR. Sediment inputs that exceed a stream's transport ability can become embedded in spawning gravels, greatly reducing salmonid egg and alevin survival. Stream substrates contaminated with fine particles are less or not suitable as future spawning and redd production areas and salmonid populations are typically negatively correlated with the amount of fine sediment in stream substrate (Chapman and McLeod 1987). Excess sedimentation and deposition may also destroy overwintering habitat and pools that act as cover for fry and juveniles, alter production of macroinvertebrate prey spedcies, and reduce total pool volume (various studies summarized in Spence et al. 1996).

   Excessive concentrations of fine sediments in spawning and rearing habitats can reduce survival of embryos and alevins by entombing embryos and reducing flow of dissolved oxygen and

decrease the availability of interstitial cover habitat. Egg deposition and survival are reduced when sediment fills the interstitial spaces between gravels and prevents the flow of oxygen and the flushing of metabolic wastes. Fine sediment deposited in stream substrates is directly related to chinook salmon egg-to-fry survival. As fine sediment increases above approximately 19 %, chinook salmon egg-to-fry survival declines rapidly (Tappel and Bjornn 1983; Chapman and McLeod 1987; Burton et al. 1993). Rhodes et al. (1994) concluded that survival to emergence for chinook salmon in the Snake River Basin is probably substantially reduced when fine sediment concentrations (<6.4 millimeters in size) in spawning gravel exceed 20 percent. They recommended suspension of ongoing activities and prohibition of new activities where this standard is exceeded.

Emerging fry can also be trapped and smothered by sediment deposition in the gravels. As sediment becomes deposited in interstitial spaces, rearing habitat for juvenile salmonids is also reduced. Rearing areas are diminished as sediment fills pools and other areas. Sedimentation of deep pools and coarse substrate used for rearing and overwintering limits the space available for fish. Increased sediment load can be detrimental to juvenile salmon not only by causing siltation, but also by introducing suspended particulate matter that interferes with feeding and territorial behavior (Berg and Northcote 1985). Bell (1986) cited a study in which salmonids did not move in streams where the suspended sediment concentration exceeded 4,000 milligrams per liter (mg/L) because of a landslide. Newly emerged fry appear to be more susceptible to even moderate turbidity than older fish. Turbidity in the range of 25-50 NTUs (equivalent to 125-275 mg/L of suspended bentonite clay in water) reduced growth and caused more young salmon and steelhead to emigrate from laboratory streams than did clear water (Sigler et al. 1984).

A major concern in the relationship between sediment and invertebrates is the question of the effect on fish production as the result of reduced invertebrate production due to sediment. Potential effects of sedimentation on benthic invertebrates include interference with respiration and the overwhelming of filtering insects such as some caddisfly (Trichoptera) larvae that employ fine-meshed catchnets for obtaining drifting food particles. However, the major effect upon benthic invertebrates is the mass smothering of physical habitat by heavy sediment deposition on the streambed, including the loss of interstitial space occupied by burrowing or hyporheic animals (Waters 1995).

Project activities involving alteration of streambanks during removal of materials associated with the push-up berm structures are most likely to introduce fines into the stream. Conservation measures such as the use of straw bales and timing of construction are expected to greatly reduce the amount of fines entering the stream or being disturbed by construction activities. These countermeasures will avoid the likelihood of long-term adverse effects to spawning and rearing habitat.

Existing irrigation methods require that the irrigator perform annual (or more frequent) instream maintenance of the push-up berm using heavy machinery in the wetted ("live") stream channel. This results in regular disturbance and compaction of the stream substrate and increased introduction and suspension of sediment into the water column. Replacing the push-up berm with a permanent structure should improve conditions for spawning and rearing of eggs salmon and steelhead by eliminating regular instream structure maintenance. In order to minimize sediment delivery to the stream, work will be done behind coffer dams installed at the upper end of each project area.

2. Safe Passage Conditions: Coffer dams will be used to direct water away from the work area, yet still allow for fish passage as the old diversion is removed and the new structure is installed. A temporary coffer dam will block one side of the river channel while the other is open for unobstructed stream passage. When inchannel work behind the first coffer dam is completed, it will be removed and the other side of the river channel will be temporarily blocked by a second coffer dam. In this manner, only a portion of the river channel will be obstructed and dewatered at any one time, leaving the remaining channel for upstream and downstream anadromous salmonid movements. These flow modifications will last no more than two to three weeks on each side of the river channel. During construction, the hours of instream work are restricted to allow for some period of noise-free and other disturbance-free time to facilitate chinook salmon and steelhead movement.

   Replacing the push-up berm with a permanent structure will improve conditions for upstream and downstream migrating fish by eliminating annual instream maintenance, improving water quality conditions, creating step pools, increasing flow over the new structures, and by creating a well defined thalweg, which will enable fish passage during low flow periods. Most notably, the removal and replacement of the push-up dam across the EFSR will eliminate a major fish passage obstruction.

3. Riparian Vegetation: Negligible amounts of streambank vegetation will be removed, if any, as a result of project activities. Some minimal amount may be lost or damaged due to the results of keying in the new diversion structure into the bank. In the case that some willows may be removed, they will be incorporated into the new rip-rap to the best extent possible. No net reduction of riparian vegetation is expected with project conservation measures in place.

4. Water Quality: Heavy equipment will be used for project implementation in and near EFSR. To ensure water quality is not adversely affected, a contingency plan is specified in the contract documents for the handling of fuels and other hazardous materials and in the case of spills. No waste disposal of petroleum products is allowed on or near the project site. Fueling of equipment will occur outside of 100 feet of any water body. The BA and the Contract Documents for the SEF 12 Project put in place vehicle inspection and leakage prevention measures.

The existing diversion and irrigation methods require annual or more frequent instream maintenance of the push-up berm using heavy machinery. Increased potential risks to water quality impairment or catastrophic pollution events associated with the introduction of petroleum products or antifreeze into the EFSR and downstream reaches of the Salmon River are linked to regular push-up berm maintenance with instream heavy equipment. The new, permanent structure for SEF 12 Diversion will not require similar instream disturbances on a regular basis with heavy equipment vehicles once it is installed and operational.

2.2.2 Species Effects

If fish salvage (as agreed to at the June 19, 2003 interagency meeting) is required during construction, the direct effects will be maintaining the survival rates of juvenile and adult chinook salmon and steelhead in this reach and downstream reaches of the EFSR. Under existing practices with the push-up berm, there are no contingency plans or fish salvage operations. Although there is no direct evidence of fish kills, the potential for fish mortality is greater under the existing design and ongoing maintenance of the SEF 12 Diversion structure because of the regular disturbance of the streambed and push-up berm, and the possibility of crushing fishes or redds with heavy equipment operating in the wetted stream channel.

The effect that a proposed action has on particular essential features or MPI pathways can be translated into a likely effect on population growth rate. In the case of this consultation it is not possible to quantify an incremental change in survival for Snake River spring/summer chinook salmon and Snake River Basin steelhead.

While population growth rates have been calculated at the large ESU scale, changes to the environmental baseline from the proposed action were described only within the action area (typically a watershed). An action that improves habitat in a watershed, and thus helps meet essential habitat feature requirements, may therefore increase lambda[7] for the populations of the ESUs in the action area.

Based on the effects on steelhead and chinook salmon habitat described above, the SEF 12 project will have a net positive effect on the survival and recovery of Snake River spring/summer chinook salmon and Snake River Basin steelhead. Although the positive influences of this project are very hard to quantify, even over time, the cumulative effects of this project, similar diversion structure projects, and other anadromous salmonid habitat improvements in the EFSR, its tributaries, and mainstem Salmon River should be measurable in increased number of redds and increases in outmigrations for ESA-listed anadromous fishes.

[7]lambda is the annual rat of population change (See Appendices A & B)

2.2.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." These activities within the action area also have the potential to adversely affect the listed species and critical habitat. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being reviewed through separate section 7 consultation processes. Federal actions that have already undergone section 7 consultations have been added to the description of the environmental baseline in the action area.

State, tribal, and local government actions will likely be in the form of legislation, administrative rules or policy initiatives. Government and private actions may encompass changes in land and water uses–including ownership and intensity–any of which could adversely affect listed species or their habitat. Government actions are subject to political, legislative, and fiscal uncertainties.

Changes in the economy have occurred in the last 15 years, and are likely to continue, with less large-scale resource extraction, more targeted extraction, and significant growth in other economic sectors. Growth in new businesses, primarily in the technology sector, is creating urbanization pressures and increased demands for buildable land, electricity, water supplies, waste-disposal sites, and other infrastructure.

Economic diversification has contributed to population growth and movement, and this trend is likely to continue. Such population trends will result in greater overall and localized demands for electricity, water, and buildable land in the action area; will affect water quality directly and indirectly; and will increase the need for transportation, communication, and other infrastructure. The impacts associated with these economic and population demands will probably affect habitat features such as water quality and quantity, which are important to the survival and recovery of the listed species. The overall effect will likely be negative, unless carefully planned for and mitigated.

Existing activities that occur within the immediate vicinity of the SEF 12 Project include general agriculture, livestock grazing, water withdrawals from surface and groundwater sources, septic system use, and cropland irrigation.

Dramatic changes are not expected in land use patterns from the existing, low density rural lifestyle that concentrates on livestock and forage production on farmsteads and ranches interspersed with homesteads and diffuse, low-level recreation. The proposed action creates a permanent, hard structure for diverting water for irrigation and livestock watering as a replacement for a more temporary push-up dam and leaking, earthen conveyance ditch, and thus increases the likelihood that land uses will remain the same for a longer period of time as farming and grazing practices become more efficient and cost-

effective.

The IDEQ will establish Total Maximum Daily Loads (TMDLs) in the Snake River basin, a program regarded as having positive water quality effects. The TMDLs are required by court order, so it is reasonably certain that they will be set. The State of Idaho has created an Office of Species Conservation to work on subbasin planning and to coordinate the efforts of all state offices addressing natural resource issues. Demands for Idaho's groundwater resources have caused groundwater levels to drop and have reduced flow in springs for which there are senior water rights. The Idaho Department of Water Resources (IDWR) has begun studies and promulgated rules that address water right conflicts and demands on a limited resource. The studies have identified aquifer recharge as a mitigation measure with the potential to affect the quantity of water in certain streams, particularly those essential to listed species. As part of this project, the irrigator/private landowner and the IDFG have entered into an Optimum Maximum Diversion Flow Agreement (Appendix C).

Plans for consolidation and replacement of the diversion structures at SEF 10 and SEF 11 and HC 1 and HC 2 are also being reviewed. These actions, while likely to have a net positive effect on stream substrate and fish passage conditions, as the proposed action does, will be subject to section 7 consultation, and thus are not considered cumulative effects in this consultation.

2.2.4 Consistency with Listed Species ESA Recovery Strategies

Recovery is defined by NOAA Fisheries (NMFS) regulations (50 CFR 402) as an "improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4 (a)(1) of the Act." Recovery planning is underway for listed Pacific salmonid species in the Northwest with technical recovery teams identified for each domain. Recovery planning will help identify measures to conserve listed species and increase the survival of each life stage. NOAA Fisheries also intends that recovery planning identify the areas/stocks most critical to species conservation and recovery and thereby evaluate proposed actions on the basis of their effects on those areas/stocks.

Until the species-specific recovery plans are developed, the FCRPS Opinion and the related December 2000 *Memorandum of Understanding Among Federal Agencies Concerning the Conservation of Threatened and Endangered Fish Species in the Columbia River Basin* (together these are referred to as the Basinwide Salmon Recovery Strategy) provide the best guidance for judging the significance of an individual action relative to the species-level biological requirements. In the absence of completed recovery plans, NOAA Fisheries strives to ascribe the appropriate significance to actions to the extent available information allows. Where information is not available on the recovery needs of the species, either through recovery planning or otherwise, NOAA Fisheries applies a conservative substitute.

The BPA has specific commitments to uphold under the Basinwide Salmon Recovery Strategy. For

Federal lands, PACFISH, the Northwest Forest Plan, and land management plans define these commitments. The proposed action is consistent with the specific commitments and primary objectives of the Basinwide Salmon Recovery Strategy (Appendix D).

2.2.4.1 Habitat Effects

The proposed action is not likely to impair properly functioning habitat, to appreciably reduce the functioning of already impaired habitat, or to retard the long-term progress of impaired habitat toward PFC. The SEF 12 Project will eliminate the degrading effects of the current operations of the diversion structure and the regular instream maintenance of the push-up dam with heavy equipment and will improve fish passage through this reach of the EFSR. Degradation of the critical habitat associated with the construction phase of the SEF 12 Project is considered only limited and temporary in its nature and is offset by utilizing best management practices for reducing erosion, and avoiding or minimizing the introduction of petroleum products and herbicides into the waters of the EFSR mainstem and tributaries.

The proposed action is consistent with the specific habitat-based commitments and primary objectives of the Basinwide Salmon Recovery Strategy. The BPA and BOR involvement in the SEF 12 project is, in part, helping to offset more than 150 years of anadromous salmonid habitat degradation in the Salmon River basin including the EFSR watershed. In particular, the project should help improve rearing and fish passage habitat and protect downstream spawning and in-gravel nursery habitat.

2.2.4.2 Species Effects

Based on the habitat effects described above, the proposed action will not reduce and may increase survival of ESA-listed Snake River spring/summer chinook salmon and Snake River Basin steelhead. Fish salvage as a contingency for fish strandings (as agreed to in the June 19, 2003 interagency meeting) should minimize or eliminate fish mortalities associated with the removal of the existing push-up berm and installation of the new, permanent SEF 12 Diversion structure. In reaching these determinations, NOAA Fisheries used the best scientific and commercial data available.

2.3 Conclusions

2.3.1 Critical Habitat Conclusion

After reviewing the current condition of the critical habitat, the environmental baseline for the action area, the effects of the proposed action, and cumulative effects in the action area, it is NOAA Fisheries'

opinion that the SEF 12 Project is not likely to destroy or adversely modify their critical habitat over the long term. However, there are short-term effects to critical habitat that are temporary in nature and that involve mitigative practices to reduce the extent and time period for the risks to habitat.

2.3.2 Species Conclusion

After reviewing the current status of the Snake River Basin steelhead and the Snake River spring/summer chinook salmon, the environmental baseline for the action area, the effects of the proposed actions directly on the species and through modification of their habitat, and cumulative effects in the action area, it is NOAA Fisheries' opinion that the proposed modifications to the SEF 12 Diversion structure is not likely to jeopardize the continued existence of the Snake River Basin steelhead and the Snake River spring/summer chinook salmon.

2.4 Conservation Recommendations

Conservation recommendations are defined as "discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information" (50 CFR 402.02). Section 7 (a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. The conservation recommendations listed below are consistent with these obligations, and therefore should be implemented by the BPA.

1. The BPA should make every effort to minimize the duration of construction activities.
2. The BPA should attempt to minimize the spatial extent of disturbance.
3. The BPA should complete instream work within the established work window of July 7 and August 15 to avoid unnecessary risks to the most vulnerable life stages (eggs and alevins) of the ESA-listed Snake River spring/summer chinook salmon and Snake River Basin steelhead in the EFSR and downstream reaches of the mainstem Salmon River.
4. The BPA should conduct instream work during only part of any 24-hour period of a day to provide for a time for fish passage through the project area on the EFSR that is free from noise and other disturbances associated with construction with heavy equipment.

In order for NOAA Fisheries to be kept informed of actions minimizing or avoiding adverse effects, or those that benefit listed species or critical habitat, NOAA Fisheries requests notification of the achievement of any conservation recommendations when the BPA submits its monitoring report describing action under this Opinion or when the project is completed.

2.5 Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required if: (1) The amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; (2) new information reveals effects of the action may affect listed species in a way not previously considered; (3) the action is modified in a way that causes an effect on listed species that was not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease, pending conclusion of the reinitiated consultation.

2.6 Incidental Take Statement

Section 9 and rules promulgated under subsection 4(d) of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is defined as an act that may include significant habitat modification or degradation where it actually kills or injures fish by impairing breeding, spawning, rearing, migrating, feeding, or sheltering." Harass is defined as actions that create the likelihood of injuring listed species by annoying it to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the BPA must comply in order to implement the reasonable and prudent measures.

2.6.1 Amount or Extent of Take

The proposed action is reasonably certain to result in incidental take of the listed species. NOAA Fisheries is reasonably certain the incidental take described here will occur because: (1) the listed species for all life stages are known to occur in the action area; and (2) the proposed action is likely to cause impacts to critical habitat significant enough to impair feeding, breeding, migrating, or sheltering for the listed species, at least in a temporary fashion. Fish salvage is authorized by NOAA Fisheries, and if necessary, work shall stop immediately and fish salvage should proceed in coordination with

NOAA Fisheries, USFWS, and IDFG. Based on salvage operations and lethal take of approximately 15 juvenile Snake River spring/summer chinook salmon associated with construction for the removal and replacement of a similar diversion structure on the Lemhi River, NOAA Fisheries anticipates a lethal take of 15 juvenile fish. Exceeding that level of take (non-lethal and lethal) may only occur under the approval and supervision of the IDFG and NOAA Fisheries. Additional juveniles and/or adults are authorized to be captured, held live, and/or moved to a safe location outside of the influences of the project under the participation and supervision of IDFG and NOAA Fisheries. The lethal take of adult Snake River spring/summer chinook salmon and/or Snake River Basin steelhead or their active redds is not anticipated, except possibly under some authorized fish salvage operations. The extent of take is anticipated to be less than 100 yards downstream and including the SEF 12 Project site during the period of the established work window (July 7 to August 15, 2003) for 14 days or less. If the proposed action results in an exceedance in this incidental take statement, the BPA would need to notify NOAA Fisheries and reinitiate consultation. The authorized take includes only take caused by the proposed action within the action area as defined in this Opinion. It does not authorize violations of the Clean Water Act and the State of Idaho Surface Water Quality Standards.

2.6.2 Reasonable and Prudent Measures

Reasonable and Prudent Measures (RPMs) are non-discretionary measures to minimize take, that may or may not already be part of the description of the proposed action. They must be implemented as binding conditions for the exemption in section 7(o)(2) to apply. The BPA has the continuing duty to regulate the activities covered in this incidental take statement. If the BPA fails to require the applicants to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse. NOAA Fisheries believes that activities carried out in a manner consistent with these reasonable and prudent measures, except those otherwise identified, will not necessitate further site-specific consultation. Activities which do not comply with all relevant reasonable and prudent measures will require further consultation.

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of listed fish resulting from implementation of the action. These reasonable and prudent measures would also minimize adverse effects on designated critical habitat.

The BPA shall:

1. Monitor the effects of the proposed action to determine the actual project effects on listed fish (50 CFR 402.14 (i)(3)). The type of monitoring shall be able to detect adverse effects of the proposed action, assess the actual levels of incidental take in comparison with anticipated incidental take documented in the Opinion, and detect circumstances where the level of incidental take is exceeded. Monitoring shall also

address fish passage and ensure that it is improved with the replacement of the push-up berm and the operation of the improved SEF 12 Diversion structure. To ensure effectiveness of implementation of the reasonable and prudent measures, all fish removal and handling, spill containment, prevention, and control plans, and hazardous materials sites shall be monitored and evaluated both during and following construction, and meet criteria as described below in the terms and conditions.

2. Minimize the impact of incidental take by adhering to the work window days outlined in the BA, implementing the work during daylight hours, and by adhering to spill response/contingencies and the salvage operation plan described in the BA and agreed to at the June 19, 2003 interagency meeting.

3. Minimize the impact of incidental take from construction activities by implementing BMPs for controlling sedimentation and other forms of non-point source pollution associated with construction as outlined in the Contract Documents and Specifications (BOR 2003a; BOR 2003b). This includes phases of the proposed project that occur outside of the EFSR stream channel and riparian area including modifications to the conveyance system and the farmstead, so that return waters associated with construction do not degrade ESA-listed salmonid habitat or harm listed fishes.

4. Minimize the extent of impacts on riparian vegetation and stream conditions and where impacts are unavoidable, replace or restore lost habitat functions.

5. Implement containment and clean-up procedures in any ditches and other waters that connect to the EFSR in the event of a fuel spill or other unanticipated accident or pollution event associated with the SEF 12 Project. This is in addition to spill response and contingency plans covered by the BA, Contract Documents, and the June 19, 2003 interagency meeting negotiations.

2.6.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the action must be implemented in compliance with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity. These terms and conditions are non-discretionary.

1. To implement Reasonable and Prudent Measures #1, above, BPA shall have a qualified fish biologist onsite at all times during instream construction and immediately report to NOAA Fisheries all instances of take as covered by ESA including harass, harm, or lethal take of ESA-listed species and in particular, anadromous fishes (Snake River

spring/summer chinook salmon and Snake River Basin steelhead). In addition, BPA has agreed to collect the following ecological data and meet the following additional requirements:

a. Baseline information on the fish populations and salmonid habitat features for each life history stage represented in the EFSR in the vicinity of the SEF 12 Project and downstream to its mouth and confluence with the Salmon River.

b. Fish population and salmonid habitat data will be collected during construction and after project completion. Monitoring of the effects of the project should occur for 5 years following final construction and initiation of operations of the new structure for water diversion and conveyance.

c. Annual (by January 31 of the following calendar year) and final monitoring and evaluation reports will be provided to NOAA Fisheries (100 Courthouse Drive, Suite F, Salmon, ID 83467 or (208) 756-6498 facsimile).

d. Fish passage will be provided for any adult or juvenile salmonid species present in the project area during construction, and after construction for the life of the project.

(1) BPA must ensure that the entire width of the EFSR is not obstructed at any one time during construction and should adhere to the plans outlined in the BA and Contract documents to construct temporary coffer dams in stages that only partially block the river.

(2) BPA should ensure that the "V-weir" is properly functioning during high and low flows to enable adult and juvenile salmonids to pass through the project area in an unimpeded manner. If the structure or other design features of SEF 12 Diversion that enable fish passage need modifications or repairs, BPA shall notify NOAA Fisheries and USFWS and obtain written concurrence.

(3) BPA, its contractors, and agents shall ensure that EFSR remains undisturbed from instream work, nearby blasting, and work in the riparian zone in the vicinity of the SEF 12 Diversion structure between 6:00 PM (MST) and sunrise.

(4) If flows and depths do not allow fish passage during the allowed work window, BPA must cease instream operations and contact NOAA Fisheries immediately. Based on necessary instream flows and depths,

BPA may have to remove their coffer dams or propose a feasible alternative to allow unimpeded fish passage in the vicinity of the SEF 12 Project. Written permission from NOAA Fisheries is required to proceed in an alternative fashion that maintains the necessary instream flows and depths for fish passage during construction.

e. The structure shall be visually inspected at least annually to ensure structural integrity and unobstructed fish passage through the notches. BOR and NRCS engineers agreed at the June 19, 2003 interagency meeting to oversee the construction phase. If at any time a determination is made that the structure is not performing as intended, NOAA Fisheries and USFWS will be included in discussions regarding repair and/or modifications. Items that shall be monitored are:

(1) The notches will be inspected to ensure that debris such as rock or logs is not blocking them.

(2) The notches will be inspected to ensure they are functioning as designed over the entire flow regime of the EFSR, with particular attention to water depth and velocity through the notches, and especially under the lowest flow conditions.

2. To implement Reasonable and Prudent Measure #2, above, BPA shall implement all spill response, contingency, and salvage plans identified in the final BA and Contract Documents. In addition,

a. In the case of a pollution event including but not limited to a fuel spill, notification of NOAA Fisheries, USFWS and the Idaho Department of Environmental Quality is required.

b. In the case of the necessity of salvage, all work must stop and notification of NOAA Fisheries, USFWS, and IDFG is required.

c. If a sick, injured, or dead specimen of a threatened or endangered species is found, the finder must notify the Vancouver Field Office of NOAA Fisheries Law Enforcement at (360) 418-4246. The finder also has the responsibility to carry out instructions provided by Law Enforcement.

d. The finder must take care in handling sick or injured specimens to avoid further injury of individuals, and

e. In the event that any individuals of a listed species is killed, care will be provided in handling the dead specimen(s) to ensure proper scientific preservation of the biological material in the best possible state for later necropsy and for ensuring that evidence intrinsic to the specimen(s) is not unnecessarily disturbed and remains intact for further investigation

f. BPA and its contractors and other agents must adhere to the calendar date constraints as outlined in the final BA and Contract Documents, which limit the timing of all in-water work to the established work window of July 7 to August 15, 2003.

g. BPA and its contractors and other agents must adhere to a daily schedule that leaves the stream undisturbed from 6:00 PM (MST) to sunrise.

h. Project operations will cease under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.

i. All water intakes used for a project, including pumps used to isolate an in-water work area, will have a fish screen installed, operated and maintained according to NMFS' fish screen criteria.[8]

j. The BPA must stop work if spawning ESA-listed salmonids or a redd are found within the confines of the project area or in close proximity downstream of the SEF 12 Project. BPA must notify NOAA Fisheries and the agencies will determine under what specific timing and other requirements work can resume.

k. Exceptions to the daily time and calendar date constraints may be accommodated by NOAA Fisheries if supported by additional biological and other site-specific data and a sound ecological rationale is presented. These exceptions and modifications require written concurrence from NOAA Fisheries.

l. Within 3 months following completion of any fish removal activities, a report that contains all pertinent information for reporting take is provided to NOAA

[8] National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (http://www.nwr.noaa.gov/1hydrop/hydroweb/ferc.htm).

Fisheries.

3. To implement Reasonable and Prudent Measure #3, above, BPA shall implement all BMPs for controlling sedimentation and other forms of non-point source pollution associated with construction as identified in the final BA and Contract Documents. In addition,

   a. Upon completion of the project, a copy of all monitoring reports on the effectiveness of implementing and maintaining the site-specific water quality and other environmental conditions are provided to NOAA Fisheries.

4. To implement Reasonable and Prudent Measures #4, above, BPA shall implement all conservation measures identified in the final BA and Contract Documents. These are identified in Section 1.2 of this Opinion. In addition,

   a. "Waterway" is defined as any perennial, intermittent, or manmade channel or water conveyance system.

   b. Alteration of native vegetation is minimized. Where possible native vegetation will be removed and stockpiled in a manner that ensures that roots are left intact and then replanted when appropriate.

   c. All exposed areas within the riparian corridor are replanted with endemic riparian species appropriate for the local floral community.

   d. If reseeding or replanting cannot occur immediately following completion of construction, soil conservation measures such as matting or straw bales shall be placed to minimize soil erosion until spring, when the area will be replanted.

   e. Revegetated areas will be monitored during the first fall following replanting and reseeding, the following spring, and then annually for five years. Any dead plantings of woody vegetation will be replanted to achieve a minimum of 80 % survival after three years, and grasses will be reseeded if not reestablished. Access by cattle and other livestock will be excluded for at least 3 years following construction to allow riparian vegetation to reestablish.

   f. Revegetated areas will be monitored to evaluate reestablishment of desired riparian plant species and avoidance of displacement by exotic and undesirable species. Weeds will be hand pulled whenever feasible.

g. A report documenting the results of riparian vegetation monitoring will be prepared annually and submitted to NOAA Fisheries (100 Courthouse Drive, Suite F, Salmon, ID 83467 or (208) 756-6498 facsimile) by the following January 31.

h. The BPA shall inform NOAA Fisheries of the planned construction schedule to allow NOAA Fisheries to observe any construction activities. Contact: NOAA Fisheries, ATTN: Jan Pisano, Team Leader, 100 Courthouse Drive, Suite F, Salmon, Idaho 83467; or call (208) 756-6478; or facsimile (208) 756-6498; or email at: jan.pisano@noaa.gov

5. To implement Reasonable and Prudent Measure #5, above, BPA shall ensure that:

a. The Spill Response/Contingency Plans, as delineated in the BA, Contract Documents, and the June 19, 2003 interagency meeting consensus decisions should also be applied to the conveyance system (ditch) and other waters that connect to the EFSR in the event of a spill or other unanticipated accident or pollution event.

b. BPA and its contractors should notify NOAA Fisheries, USFWS, and IDEQ in case of a release or other pollution event.

6. All terms and conditions shall be included in any permit, grant, or contract issued for the implementation of the action described in this Opinion.

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Statutory Requirements

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan.

Pursuant to the MSA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (section 305(b)(2)).

- NOAA Fisheries must provide conservation recommendations for any Federal or state action that may adversely affect EFH (section 305(b)(4)(A));

- Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NOAA Fisheries EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations (section 305(b)(4)(B)).

The EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA section 3). For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.10). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g*., loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

The EFH consultation with NOAA Fisheries is required for any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action may adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects on EFH.

3.2 Identification of EFH

Pursuant to the MSA the Pacific Fishery Management Council (PFMC) has designated EFH for three species of Federally-managed Pacific salmon: chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years). Detailed

descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based, in part, on this information.

3.3 Proposed Actions

The proposed action and action area are detailed above in Sections 1.2 and 1.3 of this document. The action area includes habitats that have been designated as EFH for various life-history stages of chinook salmon (Table 3).

Table 3. Species of Fishes and Life Stages with Designated EFH in the Action Area

Species	Eggs	Larvae	Young Juvenile	Juvenile	Adult	Spawning
Chinook salmon	X	X	X	X	X	X

Table 3 shows the fish species and life stages of fish with EFH in the SEF 12 project area. No ground fish or coastal pelagic species EFH will be affected by this proposed project.

3.4 Effects of Proposed Action on EFH

The habitat requirements for chinook salmon have been evaluated and have been found to be the same as the habitat requirements for the Snake River spring/summer chinook salmon and Snake River Basin steelhead. As described in detail in Section 2.2.1 of this document, the proposed action may result in short- and long-term adverse effects on a variety of habitat parameters.

These adverse effects are:

1. Increases in siltation and substrate embeddedness associated with increased loading and mobilization of sediments, especially fine materials. This is considered a short-term adverse effect downstream of the SEF 12 Project.

2. Increase in turbidity associated with increased stream substrate and bank disturbance during the creation and destruction of temporary construction coffer dams. This is considered a short-term adverse effect downstream of the SEF 12 Project.

3. A temporary disruption of migration timing through the stream reach of EFSR in the general vicinity of the SEF 12 Project.

Additional potential short- and long-term adverse effects on EFH, not addressed in Section 2.2.1, include:

4. A temporary disruption of feeding habitat for fry, juveniles, and adult chinook salmon associated with increases in turbidity interfering with visual predation and siltation decreasing benthic invertebrate production.

5. A longer term disruption of benthic habitats, channel morphology and flow dynamics is likely in the EFSR upstream and downstream of the SEF 12 Project until natural flow regimes and events bring the stream channel back into a new equilibrium.

3.5 Conclusion

NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for chinook salmon. However, NOAA Fisheries also believes that the project design features proposed as an integral part of the proposed actions would avoid, minimize, or otherwise offset potential adverse impacts to designated EFH, if the terms and conditions as described above in the ESA section of this Opinion are incorporated into the project. Eventually, the completed project is likely to improve current conditions for listed salmon and steelhead at and below the diversion site.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions that may adversely affect EFH. NOAA Fisheries understands that the conservation measures described in the final Biological Assessment and contract documents will be implemented by the BPA, and believes that these measures are sufficient to minimize, to the maximum extent practicable on EFH. Although, these conservation measures are not sufficient to fully address the remaining adverse effects to EFH, specific Terms and Conditions outlined in Section 2.6.3 are generally applicable to designated EFH for chinook salmon, and do address these adverse effects. Consequently, NOAA Fisheries recognizes that the proposed actions include mitigative measures to avoid effects on EFH, and additional non-discretionary conservation measures are required by this Opinion as Reasonable and Prudent Measures and Terms

and Conditions. No further conservation measures are necessary for EFH.

3.7 Statutory Response Requirement

Pursuant to the MSA (section 305(b)(4)(B)) and 50 CFR 600.920(j), Federal agencies are required to provide a detailed written response to NOAA Fisheries' EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. In the case of a response that is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

3.8 Supplemental Consultation

The BPA must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920(l)).

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